



Relationship of Motor Fitness Components with Volleyball Ability of Volleyball Players

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Abstract :

The purpose of the study was to find out the relationship of motor fitness components with Service Ability of volleyball players. For the present study the selection of the sampling was based on Veer Narmad South Gujarat University, Surat Volleyball intercollege tournament. Here for this said tournament participating colleges were divided into four zones, Surat city, Surat Rural, Bharuch and Valsad district respectively. Out of these zones the four semi-finalists team of each zone means sixteen best teams, four from each zone having 192 male best players based on their performance, select total 180 subjects out of 192 for the present study. The subjects selected was in the age range of 17 -25 years. After being informed of the study's requirements, each participant willingly consented to participate in the testing program. The research scholar met and had a special conversation to orient the subjects on the research study. A detailed explanation of the testing, experimental process, and exercise schedules was provided so that the subjects would know exactly what to expect and how much effort would be required of them.

The standard of measurement in this research study was measuring Speed - 50 Yard Dash test, Agility-4 X 10 m shuttle run, Flexibility- Seat and Reach, Explosive power- Sargent jump, Cardio – vascular endurance through the Cooper's 12 minutes ran/walk. In order to investigate the motor fitness components and skill performance of volleyball players, descriptive analysis statistics; such as mean, standard deviation, minimum value, maximum value was applied. The relationship of motor fitness components and skill performance of volleyball players, was established by computing Karl Pearson's Product Moment Co-relation was used. The combined contribution of separately considered motor fitness components to skill performance was obtained through multiple correlations. Further in order to find out which aspect has the maximum impact on the skill performance score of volleyball players, multiple regression analysis was applied. For testing the hypothesis, the levels of confidence were set at $p < 0.05$. The Conclusion are as under The speed significantly positive. And agility and flexibility significantly negative correlation with the volleying ability. The negative but not statistically significant correlation between explosive power and cardio-vascular endurance and volleying ability. The explosive power significantly negative correlation with the service ability. The positive but not statistically significant correlation between speed, flexibility and agility. And the cardio-vascular endurance negative not statistically significant correlation with the service ability.

Introduction :

Sports and games are crucial for success in many facets of our lives, not just academic accomplishment. In the modern developed world, they are also a standard part of the curricula at schools and universities. Sports and games play a vital role in a student's life. To succeed in competitive tests, a student needs to put in a lot of study time. But to experience life's vitality and health, you also need to exercise and participate in sports. Sports and games have existed for as long as human civilization and have gained a collective status in contemporary culture. It is now more popular than any other kind of social interaction. Since physical education and sports are now part of the regular curriculum, it has become an essential component of the educational process. Different sports and games are taught to students in a methodical, scientific manner. Apart from instruction, pupils undergo performance evaluations. Engaging in sports and games for enjoyment and to reap the benefits on a physical, mental, social, emotional, and physiological level.

Within the hierarchy of human values, sports conquest occupies a special place. It combines triumph, achievement, and certain people's dominance over their friends and teammates. The loser's applause for the winners, along with their genial and shrugging demeanor, shows the sublimity of competition.

A multitude of milestones have been reached in the gaming and sports industries thanks to various advancements in general and their use in the sports sector specifically. Achieving greatness in performance across several sports has become more and more dependent on scientific research into athlete performance. The use of new, scientifically verified training techniques and means of carrying out physical activity, such as sports tactics and techniques, equipment advancements, better sports fields, and other elements and conditions of the sports training system, has allowed athletes to perform at an exceptionally high level.

Everyone needs to be physically fit in order to keep their bodies. General motor fitness contributes to the maintenance of excellent physical and psychological health.

The neuromuscular aspects of fitness that allow an individual to excel in a given game, activity, or motor skill. A few examples of specific motor fitness components are power, agility, balance, coordination, speed, and reaction time. Skill-related fitness is another name for motor fitness. Also see physical well-being.

The most valuable thing a person can own is motor fitness, which must be acquired via regular motor training regimen. It goes without saying that healthy folks are a country's greatest assets and unhealthy citizens its liabilities. Since motor fitness is a prerequisite for the majority of the tasks that a man must perform in his everyday life, it is the duty of every nation to promote motor fitness among its population. A person's ability to think and work, which are crucial for both one's personal life and society in a welfare state, is compromised if his body is underdeveloped or sedentary and if he fails to develop motor prowess.

The Purpose of the Study:

The purpose of the study was to find out the relationship of motor fitness components with Skill performance of volleyball players.

Selection of Subjects

For the present study the selection of the sampling was based on Veer Narmad South Gujarat University, Surat Volleyball intercollege tournament. Here for this said tournament participating colleges were divided into four zones, Surat city, Surat Rural, Bharuch and Valsad district respectively. Out of these zones the four semi-finalists team of each zone means sixteen best teams, four from each zone having 192 male best players based on their performance, select total 180 subjects out of 192 for the present study. The subjects selected was in the age range of 17 -25 years.

After being informed of the study's requirements, each participant willingly consented to participate in the testing program. The research scholar met and had a special conversation to orient the subjects on the research study. A detailed explanation of the testing, experimental process, and exercise schedules was provided so that the subjects would know exactly what to expect and how much effort would be required of them.

Criterion of Measurement

Sr. No.	Motor Fitness Components	Methods	Unit/Measures
1.	Speed	50 Yards Dash	Second 1/100
2.	Agility	4 X 10 m shuttle run	Second 1/100
3.	Flexibility	Seat and Reach	Centimetres
4.	Explosive power	Sargent jump	Centimetres
5.	Cardio – vascular endurance	Cooper's 12 minutes ran/walk	Distance Covered

Statistical Procedure

1. In order to investigate the motor fitness components and skill performance of volleyball players, descriptive analysis statistics; such as mean, standard deviation, minimum value, maximum value was applied.
2. The relationship of motor fitness components and skill performance of volleyball players, was established by computing Karl Pearson's Product Moment Co-relation was used.
3. The combined contribution of separately considered motor fitness components to skill performance was obtained through multiple correlations.
4. Further in order to find out which aspect has the maximum impact on the skill performance score of volleyball players, multiple regression analysis was applied.
5. For testing the hypothesis, the levels of confidence were set at $p < 0.05$.

Result of the Study :

Table – 1.1 Relationship of Motor Fitness Components with Volleying Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation efficient	Co-Sig. (2-tailed)
1	Speed	Volleying Ability	0.150	0.04
2	Agility		- 0.160	0.03
3	Flexibility		- 0.159	0.03
4	Explosive Power		- 0.086	0.25
5	Cardio-vascular Endurance		- 0.037	0.62

***Statistical significant at 0.05 level**

The correlation coefficient between the volleying ability and motor fitness components of the volleyball players was presents in table 1.1. The statistical findings demonstrated that the speed ($r = 0.150$, $p < 0.05$) significantly positive and agility ($r = - 0.160$, $p < 0.05$) and flexibility ($r = - 0.159$, $p < 0.05$) significantly negative correlation with the volleying ability. Regarding the other variables, there was a negative but not statistically significant correlation between explosive power ($r = - 0.086$, $p > 0.05$) and cardio-vascular endurance ($r = - 0.037$, $p > 0.05$) and volleying ability.

The multiple correlation method yields correlations between a volleying ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This

allowed researchers to ascertain the combined contributions of specific motor fitness components (speed, agility, flexibility, explosive power and cardiovascular endurance) to volleying ability of volleyball players. Table 1.1 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table – 1.2 Multiple Correlation between Volleyball Players' Volleying Ability and Motor Fitness Components

Dependent Variables	Independent Variable	Multiple Coefficient of Correlation (r)	Multiple Correlation ANOVA F	Sig.
Volleying Ability	Speed Agility Flexibility Explosive Power Cardio-vascular Endurance	0.089	3.42*	0.00

*Statistical significant at 0.05 level

According to Table 1.2, volleyball players' combined contribution volleying ability to motor fitness components has been determined to be statistically significant at $r = 0.089$ ($F = 3.42$, $p < 0.05$).

The step-wise regression technique was used to determine which factor has the biggest influence on volleyball players' volleying ability, taking into account the motor fitness components that were previously described and selected. The results are shown in Table 1.3.

Table - 1.3 Regression Prediction of Volleying Ability with selected Motor Fitness Components of Volleyball Players

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.160 ^a	0.026	0.020	3.582
2	0.240 ^b	0.058	0.047	3.532
3	0.293 ^c	0.086	0.071	3.49

- a. Predictors: (Constant), Agility
- b. Predictors: (Constant), Agility, Flexibility
- c. Predictors: (Constant), Agility, Flexibility, Speed
- d. Depended Variable Volleying Ability

Table – 1.4 Regression Coefficients Estimating Volleying Ability Using selected Motor Fitness Components of Players in Volleyball

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.58	3.37		7.60*	0.00
	Agility	- 0.68	0.32	- 0.16	- 2.16*	0.03
2	(Constant)	29.26	3.62		8.04*	0.00
	Agility	- 0.78	0.31	- 0.18	- 2.47*	0.01
	Flexibility	- 0.11	0.04	- 0.18	- 2.46*	0.01
3	(Constant)	22.82	4.53		5.04*	0.00
	Agility	-0.86	0.31	- 0.20	- 2.74*	0.00
	Flexibility	-0.11	0.04	- 0.18	- 2.49*	0.01
	Speed	1.01	0.43	0.17	2.34*	0.02

Dependent Variable: Volleying Ability

Table 1.4 displays the regression models that are available. Since the Adjusted R² value in the third model is 0.071, the regression equation was developed using the second model.

Furthermore, table 1.4 shows that three independent variables—agility, flexibility, and speed—have been found in the second model. As a result, the regression equation will only be developed using these three variables. These three independent factors explained

7.1 % variability in the volleyball players' volleying ability, as indicated by the model's adjusted R² value of 0.071. As a result, this model is ideal for creating the regression equations.

All of the models' regression coefficients are displayed in table 1.5. All three of the regression coefficients in the third model 't' value have significant since their p-values, or significant values, are less than 0.05. Thus, it was said that the factors of agility, flexibility and speed account for a large portion of the variances in volleying ability.

The regression equation was created using the regression coefficients (Beta) of the third model, which are displayed in Table 1.4. It is as follows:

$$\text{Volleying Ability} = 22.82 - 0.20 (\text{Agility}) - 0.18 (\text{Flexibility}) + 0.17 (\text{Speed})$$

Conclusion :

- The speed significantly positive. And agility and flexibility significantly negative correlation with the volleying ability.
- The negative but not statistically significant correlation between explosive power and cardio-vascular endurance and volleying ability.
- The explosive power significantly negative correlation with the service ability.
- The positive but not statistically significant correlation between speed, flexibility and agility. And the cardio-vascular endurance negative not statistically significant correlation with the service ability.

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